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AUTHOR Smock, Richard; Crooks, Terence
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ABSTRACT

Considerable research has gone into the development of student questionnaires for instructional evaluation. Somewhat less effort has been devoted to development of methods for diagnosis and remediation of instructional problems, but such methods are needed in any comprehensive instructional evaluation system. This paper will focus on diagnostic evaluation as a formative process, with discussion of the timing of evaluative procedures and the forms that these procedures could take. The analogues of the statistical concepts of validity and reliability in diagnostic evaluation will be examined. Examples of techniques found useful by instructors and evaluators working in this area will be presented. (Author)

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DIAGNOSIS AND REMEDIATION OF INSTRUCTIONAL PROBLEMS WITHOUT THE USE OF STANDARDIZED INSTRUMENTS*

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By

Richard Smock and Terence Crooks

Office of Instructional Resources
University of Illinois at
Urbana-Champaign, Illinois

Much has been written about evaluation by students for the purpose of judging the quality of instruction. Less has been said about what to do if the students rate the instruction as less than satisfactory; yet "the improvement of instruction" is a phrase commonly found in rationales for the development of evaluation questionnaires. To develop instruments which allow us to be critical of instruction without also developing structures and methods to help instructors improve is to leave half the job undone. This paper will focus on that neglected half.

Improvement of Instruction

There are several implications of the catch-phrase "the improvement of instruction". One implication is that instruction can be changed, a second is that change can lead to greater satisfaction for those involved, and a third possible implication is that changes may lead to measureably better learning.

We know it is notoriously difficult to change teaching habits. Orlasky and Smith (1972) have said that changes in methods of instruction are apparently more difficult to make successfully than changes in

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curriculum or administration. In the last decade the literature on higher education has expressed concern about the lack of properly trained college teachers and the inadequacies of most current doctoral programs in preparing future faculty members for their teaching roles. Meanwhile, the press for accountability continues to increase, and the need grows for more workable systems directed toward aiding faculty as they seek instructional change.

Hopefully, changed instruction means improved instruction which at the very least implies greater satisfaction for students, instructors, or both. It also implies its antithesis; former dissatisfaction with instruction which can provide an impetus to change. The perception of a "problem" is always a necessary antecedent to change. If we take instructional improvement to mean the alleviation of an individual instructor's perceived problem, then we have some basis for activities leading to diagnosis and remediation.

Many would contend that "improved instruction" can be claimed only when measureable increases in achievement occur at the same cost per student or when equal learning occurs with a lower cost per student. But as long as there is no universally acceptable criterion for quality teaching, let's leave the definition of improvement up to the instructors themselves. Often instructors are particularly concerned with student and teacher satisfaction. While such criteria of good instruction are less academically rigorous than many would prefer, they are not antithetical to more exacting definitions. Indeed, depending on the nature of the instructor's perceived problem, remediation may well include attention to learning outcomes or the efficiency of instruction based on results.

Stake's (1967) Countenance Matrix (Figure 1), originally conceived as a plan for the evaluation of educational programs, can be a useful guide for people working cooperatively with instructors as they wrestle with problems arising in individual courses. The three rows of Stake's matrix, which call for logical contingencies between antecedent conditions, transactions, and outcomes, can be a powerful analytical tool to focus

FIGURE 1

DESCRIPTIVE AND JUDGMENTAL MATRIX FOR EVALUATION*

	Intents	Observations		Standards	Judgments
ANTECEDENTS					
TRANSACTIONS					
OUTCOMES					

*Adapted from: Stake, Robert E., "The Countenance of Educational Evaluation."

attention on potential problem areas in instruction. The emphasis on antecedents and transactions is a welcome addition to the more usual focus on outcomes.

The process used to provide information and develop the credibility necessary to affect instructor judgments seems consistent with a "social-interaction" change model; one that sees change occurring as a result of a social relations network. Havelock (1969) reports substantial empirical evidence for this medel. Diagnosis and remediation of perceived instructional difficulties is most likely to occur given a method of analysis which is comprehensive as well as credible and which operates in a system conducive to encouraging changes of judgment.

The poor instruction which many students report may be partly due to the instructor's lack of knowledge about factors in teaching and learning. Because most university professors have not been formally trained to teach, it is questionable whether or not they can be held accountable for this shortcoming. Given the increasing press for accountability, with no end yet in sight, it is important for those of us interested in the evaluation of instruction to give searching consideration to evaluation methodologies and systems encouraging remediation which reach beyond those most commonly used today. Indeed, any evaluation plan which does not include an adjunct service which can effectively assist faculty members in the improvement of their teaching performance is ethically questionable.

In viewing the diagnosis and remediation of instructional problems, we will distinguish between three levels of instructional evaluation, each level directed toward fulfilling a particular function. What we call Level I evaluation fulfills the need for general, comparative, summative information. Because comparisons are made across a wide variety of course types, the questions on which Level I evaluation must be based are of such a general nature that they are of little use, except in the broadest sense of the term, to the diagnostic process. The second level

of evaluation involves gathering information about more specific attributes of classroom activities. Instruments useful for this kind of evaluation can be developed from sets of questions aimed at particular aspects of instruction. This level of evaluation is partially diagnostic in that it can help identify particular areas of success and failure in a given course. To the extent that Level II questionnaires consist of questions designed to apply to a variety of instructional settings, they can be standardized. Most student questionnaires in use today seem to be designed mainly to gather Level II information.

If the results of Level I and Level II evaluations lead the instructor to believe that there is an instructional "problem", Level III (diagnostic) evaluation is called for. This level of evaluation is course specific and almost always initiated by the instructor. Level III probably has its greatest payoff if used fairly early in a course, and if its focus is generated by a previous Level II evaluation. The aim of diagnostic evaluation is to help in remediation of aspects of instruction thought to be problems. Therefore, the exact format of the evaluation must be dictated by the nature of the problem.

Level III evaluation often produces information in a form which defies statistical treatment. For instance, the usual statistical approach to questions of reliability can rarely be used. However, it is possible to look for basic consistency of opinion among multiple raters. Such consistency is often surprisingly easy to obtain in cases where a problem is severe, especially if instructions given to the raters have been carefully formulated. A related approach to the question of reliability involves use of a two-stage evaluative process. After an initial (Level II) evaluation has tentatively identified some specific problems which seem to be present, a further evaluation in which the evaluators are asked to focus and comment specifically on these possible problems can be conducted. The criterion of consistency would then be applied to the latter evaluation.

The word "validity" can mean several different things in the context of Level III evaluation. One can look for the equivalent of criterion-related validity by measuring whether change results in instructional improvement which can be objectively measured; in the long-term view such validity is important. However, in the formative stages of diagnostic evaluation the most important type of validity is the credibility given to the information by the instructor. There is very little chance that his instruction will change unless he perceives the evaluation information to be meaningful and appropriate. In this second sense, validity can not be objectively measured, but nevertheless, it must be present.

While reliability and validity are important evaluation concepts, the aim of diagnostic (Level III) evaluation is specificity, not generalizability; and the validity of the enterprise rests on the instructor's own criterion of course improvment.

POTENTIALLY USEFUL TECHNIQUES

Open-Ended Questions

At present the most common way of attempting to gather diagnostic information is through the use of open-ended questions administered to students separately or in conjunction with a forced-choice questionnaire. Before an open-ended questionnaire can be considered to be diagnostic, questions must be focused sufficiently to elicit analytical comments from students. This is particularly important because students commonly respond in terms of adjectives about the course, but seldom explain their reasons for choosing particular adjectives. Directions to the student which clearly explain the nature of the information that is being sought can help overcome this tendency. Information gained from the more typical Level II (forced-choice) instruments is invaluable in guiding the development of open-ended questions suitable for diagnostic purposes. Experience with open-ended questions has shown that even when students rate a course quite highly on forced-choice instruments, they can be helpfully critical

if they understand the uses to be made of their information, and if questions are sufficiently focused.

An increase in student response sensitivity can be gained by ordering questions logically on an evaluation form. For instance, an open-ended item requesting an analysis of an instructor's lecturing technique could immediately follow a forced-choice item which asks the student to rate the lecturer on a four or five-point scale. Such ordering discourages students from making general good-bad statements in response to the open-ended item. The Level II, forced-choice, information should indicate the overall opinion quite well, while the Level III, open-ended, information is likely to provide helpful insight into the reasoning behind the forced-choice response.

Once systematic data has been gathered, the potential for change has been established. That change may come through a process of self-evaluation during which an instructor weighs the credibility of the information and ponders his own reaction. Often the instructor will want more information to consider and will seek additional avenues to attain it. At the University of Illinois, Urbana-Champaign campus, the desire for additional information sometimes leads an instructor to contact a member of the Office of Instructional Resources. One of the purposes of establishing the Office of Instructional Resources was to improve the quality of undergraduate instruction, and a number of people are available to work with individual instructors for that purpose. Over the last five years a variety of techniques have been tried in our attempt to gather penetrating data and conduct activities which result in changes in instruction.

Interviewing

The exact activity recommended depends on the instructor's perception of the problem, and on the types of solution which he can accept as valid. For instance, when the instructor does not believe that open-ended questions have provided sufficient information, it is possible to arrange

to interview students in more depth. In some instances, again depending on the predilections of the instructor, six or eight students from the class have met with the instructor in an informal setting to discuss problems in more detail. In cases in which the instructor would not be comfortable in such a situation, someone from the Office of Instructional Resources may sit in his place and act as an intermediary. Our experience has shown students to be quite willing, even anxious, to be critical and helpful in such settings.

In other instances, a random sample of students in a particular instructor's class have been interviewed individually. Experience gained from this activity again suggests that students are most willing to provide information that is penetrating and useful. The written reports based on student interviews may be passed along to the instructor without comment, or more commonly, can be discussed with the instructor.

TV Tapes

Videotaping a class in progress can be a frightening and yet enlightening diagnostic tool. Because instructors are often defensive about having TV equipment brought into a classroom, it is an activity which demands instructor confidence and acceptance before it is used. At the Office of Instructional Resources we make arrangements for instructors to view the tapes by themselves if they choose, and in many cases they will do so but will later request that other people view with them. It is seldom necessary to view the whole tape. Instead, watching just some portion of it usually leads into a discussion of problems made apparent by the tape.

Remediation Possibilities

In some situations students may be helpful in specifying the exact nature of an instructional problem, yet not at all helpful in suggesting possible solutions. In such situations a specialist from the Office of Instructional Resources, with knowledge both of the learning process and

of instructional methods, is frequently in an advantageous position to help an instructor broaden his outlook. It is at this point that suggestions to try different approaches to instruction may fall on receptive ears. If the problem lies in the area of testing and grading, instructors can be shown ways to improve their test items and encouraged to develop banks of high quality items. Other types of problems point to greater use of graphics in a course, increased attention to course assignments, or improved content organization. Still others suggest a wholly different approach to teaching, such as the audio-tutorial method offers. The process of "brain-storming" using students and/or teaching assistants along with the instructor might be fruitful.

Joint Appointments

Educationalists, curriculum developers, and test and measurement experts occasionally lack credibility to physicists, botanists, geographers, etc. One way of alleviating this problem is to establish joint staff appointments between the local Office of Instructional Resources and academic departments. The persons filling such appointments are subject matter specialists who, in addition, have a strong interest in instruction. Because such persons come equipped with a built-in knowledge of the language and orientations of their field, they can establish a degree of credibility difficult for those from other disciplines to obtain. While working closely with an Office of Instructional Resources' staff member, they can initiate appropriate diagnostic activities among their colleagues. A member of our staff, interacting with several such appointees, can have a much more extensive impact than would be possible when working on a strictly one-to-one basis with instructors. Joint appointments, therefore, are especially valuable.

CONCLUSION

We have previously mentioned the difficulties inherent in changing teaching habits. Because teaching methods and style are so intertwined with the personality of the instructor, and because personality changes

are not likely to be wrought, many think that instructional changes are not likely. Our experience in the Office of Instructional Resources suggests that there are many relatively unexplored activities that can lead to instructional improvement. If faculty is to be held more accountable for their instruction, we must be committed to developing more fully the activities which can lead to change.

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